M

RCSL No: 42-i1699

Edition: July 1982

Author: Torben G. Rasmussen
Henning Christensen

Title:

RC855 IBM 3780 BSC Emulator
Reference Manual

RCSL 42-i1905

A/S REGNECENTRALEN
af 1979

Keywords:

RC855, IBM 3780 BSC emulator, reference data.

Abstract:

This manual describes all the RC855 IBM 3780 BSC emulator characteristics, especially those formal criteria which do not necessarily need to be known in order to operate the emulator (i.e. file formats, record handling, communication line characteristics, command file, parameters etc.).

(44 printed pages)

Printed by A/S Regnecentralen af 1979, Copenhagen

RCSL 42-i1905

TABLE OF CONTENTS PAGE

TABLE OF CONTENTS (continued) PAGE

1. INTRODUCTION 1.

The RC855 IBM 3780 BSC Emulator software package is available for use with the RC855 Work Station.

Operating the work station from a hardware point of view is covered by the RC855 Operating Guide; ref. [1].

Operation of the RC855 with CP/M is introduced by the RC855 Work Station, User's Guide; ref [2].

Loading of the emulator is explained in the RC855 IBM 3780 BSC Emulator, Installation Guide; ref. [3].

Operation of the emulator is explained in the RC855 IBM 3780 BSC Emulator, Operating Guide; ref. [4].

The present guide provides basic reference data of the emulator.

1.1 Emulator Specifications 1.1

Communication link:	Point to point (leased) or switched (dial up) connection.
Communication facilities:	Synchroneous modems, half or full duplex.
Communication mode:	Half-duplex.
Data rates:	Up to 9600 bps.
Line protocol:	Binary Synchroneous Communication (BSC) procedures; see references in appendix A.1.
Transmission code:	EBCDIC.
3780-options supported:	EBCDIC transparency Space compression/expansion Printer horizontal format control (HT) Printer carriage control decoding (CCW) Component selection Terminal identification (ID).

Examples of host generation parameters are found in appendix B.

1.2 Emulator Parameters and Commands 1.2

The execution of the emulator functions is controlled by a set of parameters and a set of commands (function keys). A detailed description of these is found in ref. [4].

Initial values of the parameters can be assigned when applying the configuration file, otherwise a set of default values is used by the emulator.

2. FILE FORMAT AND RECORD HANDLING 2.

2.1 Transmission 2.1

Data can be transmitted in two modes (selectable by the configuration file parameter TRANSPARENCY as well as by the file name specifications /NT and /T - see ref. [4]):

non-transparent
transparent

In either modes the transmission of data is from CP/M files on a diskette. However, the record handling differs according to the applied mode.

2.1.1 Non-transparent 2.1.1

Each record is converted from ASCII to EBCDIC and transmitted as 1 record of 80 bytes. A record on the diskette is terminated by CR, NL, FF, SUB or any possible combination of these 4 characters. The termination character(s) is(are) not converted and transmitted. If a record is less than 80 bytes, it is filled with spaces. If a record is greater than 80 bytes, it is split into a number of 80 bytes records (the last filled with spaces). The transmission is terminated when a SUB-character (X'1A) or physical end of file is met.

This mode is normally used when transmitting text files.

2.1.2 Transparent 2.1.2

All data (including CR, NL, FF and SUB) are transmitted without conversion. The data is split into records of 80 bytes. The transmission is terminated at physical end of file.

This mode is normally used when transmitting binary files.

2.2 Receival 2.2

Data received is classified as follows and given different treatment accordingly:

non-transparent, print-data
non-transparent, punch-data
transparent, print- or punch-data

Non-transparent data is always converted from EBCDIC to ASCII.

Transparent data is never converted.

The received data is written in CP/M files on a diskette or directly on the printer (determined by the configuration file parameters PRINT-DEV/PUNCH-DEV). If written on diskette in a CP/M file, writing takes place as follows:

a) file does not exist - file is created and writing starts from the beginning of the file.

b) file exixts - writing starts as follows:

non-continous file: from the beginning of the file.
continous file: from the end of the previously written part of the file.

2.2.1 Non-transparent Print-data 2.2.1

1 transmission-line record is written as 1 record on the print-device. If the 2 first characters constitute an ESC-sequence (CCW to the printer) it is interpreted as follows:

ESC M	space 0 lines	CR
ESC /	space 1 line	CR.NL
ESC S	space 2 lines	CR.NL.NL
ESC T	space 3 lines	CR.NL.NL.NL
ESC A	skip to channel 1	CR.FF
ESC <everything else>	vertical tab.	CR.VT
no ESC	space 1 line	CR.NL

The ESC-sequence is not written on the print-device, but the record is terminated with a sequence of CR-NL-VT or FF (in the following called the termination characters) in accordance with the interpretation of the ESC-sequence.

If the print-device is a CP/M file, a SUB-char (X'1A) is inserted after the last record.

If the print-device is a CP/M file and the configuration file parameter PRINT-SIZE is different from zero, the record is padded with spaces/truncated to the given print-size. Padding/truncating is done immediately before the termination characters.

2.2.2 Non-transparent Punch-data

2.2.2

1 transmission-line record is written as 1 record on the punch-device. After each record CR-NL are inserted as termination characters.

If the punch-device is a CP/M file, a SUB-char (X'1A) is inserted after the last record.

If the punch-device is a CP/M file and the configuration file parameter PUNCH-SIZE is different from zero, the record is padded with spaces/truncated to the given punch-size. Padding/truncating is done immediately before the termination characters.

2.2.3 Transparent Print- and Punch-data 2.2.3

Data is written on the print-/punch-device exactly as it is received from the linie. No termination characters are inserted. The last block on the CP/M file is padded out with binary zeroes.

Print-/punch-device should be a CP/M file, because the transparent data is normally binary data which would make no sense on a printer.

3. SIGNON FILE 3.

The signon file is a CP/M file with the name S3780.TXT. After loading the emulator, the file will be transmitted if it exists on the diskette mounted in drive A. The file contains the signon-record.

The file must have the following format:

<signon-record><CR><NL>
<SUB>

The file can be created and written with the CP/M editor. Only upper case characters are acceptable.

For a description of the signon-record, see the documentation covering the requirements of the host computer.

If the host computer requires that the signon-record is transmitted in transparent mode, it can be achieved in two ways:

1) Set the configuration parameter TRANSPARENCY to ON.

   Send the signon-record as a command from the console (PA2 or PA3).

   Console commands are always converted from ASCII to EBCDIC independent of TRANSPARENCY setting.

2) Set the configuration parameter TRANSPARENCY to ON.

   Send the signon-record from a CP/M diskette file (PA1).

   Data files are not converted when transmitted in transparent mode and so the contents of the CP/M file in this case must be in EBCDIC code.

4. CONFIGURATION FILE 4.

The configuration file is a CP/M file with the name C3780.TXT. After loading the emulator, the file will be read if it exists on the diskette mounted in drive A. The file contains the configuration parameters; see ref [4].

The file must have the format:

<parameter1>=<VALUE><CR><NL>
<parameter2>=<VALUE><CR><NL>
.
.
.
<parametern>=<VALUE><CR><NL>
<SUB>

The file can be created and written with the CP/M editor. Only upper case characters are acceptable.

The configuration file can be extended in order to specify conversion table changes; see section 5.1.

Example of configuration file:

PUNCH-DEV=B:PUNCH.TXT<CR><NL>
PRINT-DEV=PRINT.TXT<CR><NL>
RECEIVE-ID=<CR><NL>
TRANSMIT-ID=RC01<CR><NL>
WAIT-TIME=3<CR><NL>
<SUB>
.

5. CHARACTER CODE SETS 5.

The RC855 IBM 3780 BSC Emulator has a number of national versions. For each national version there are two code sets:

1) The EBCDIC code set used for communication with the host computer, including BSC line control characters and printer control characters.

2) The ASCII code set used for data on diskettes and printers. The ASCII code includes the four control characters CR, NL, FF and VT, which all printers must support.

Detailed descriptions of EBCDIC- and ASCII-character sets for all national versions are found in appendix C.

For some of the national versions an alternate EBCDIC code set exists. The RC855 configuration parameter CS (Character Set) is used to select which EBCDIC code set to use:

CS = 0 EBCDIC code set is used
CS = 1 Alternate EBCDIC code set is used

In appendix C it is marked which EBCDIC code set commonly is used when running IBM 3780. The RC855 configuration parameters are described in ref. [2].

With a few exceptions, which are described in appendix C, each national character set contains 95 graphic characters, including the space (SP) character, with EBCDIC codes defined for all 95 characters.

5.1 Conversion Table Changes 5.1

It is possible to make changes in the EBCDIC character set. These changes are specified by adding a number of records to the configuration file (after the last parameter assignment).

The records must have the following format:

```
CONVERSION=<CR><NL>
<ASCII VALUE>,<EBCDIC VALUE><CR><NL>
<ASCII VALUE>,<EBCDIC VALUE><CR><NL>
.
.
.
<ASCII VALUE>,<EBCDIC VALUE><CR><NL>
```

<ASCII VALUE> must be in the range 0-127.
<EBCDIC VALUE> must be in the range 0-255.

When <ASCII VALUE> should have been transmitted, it is converted to <EBCDIC VALUE> before transmission.

When <EBCDIC VALUE> is received, it is converted to <ASCII VALUE> before writing on the diskette/printer.

Example of a configuration file with conversion table changes:

```
.
.
.
WAIT-TIME=3<CR><NL>
CONVERSION=<CR><NL>
65,194<CR><NL>
66,193<CR><NL>
42,108<CR><NL>
42,92<CR><NL>
<SUB>
```

The following changes have been made in the character code sets:

ASCII	EBCDIC		ASCII	EBCDIC
A (65)				B (194)
	B (194)		A (65)	
B (66)				A (193)
	A (193)	is	B (66)	
* (42)		converted		% (108)
	% (108)	to	* (42)	
* (42)				* (92)
	* (92)		* (42)	

The four first lines means that A and B have been switched in the EBCDIC character code set.

The four last lines means that % is changed to * in the EBCDIC character code set.

6. COMMAND FILE 6.

A command file is a CP/M file which contains file names of files to be transmitted and special commands to control the transmission.

A command file at most can contain 32 file names/commands.

The command file has the following format:

<file name or special command 1><CR><NL>
<file name or special command 2><CR><NL>
.
.
.
<file name or special command n><CR><NL>
<SUB>

The file can be created and written with the CP/M-editor. Only upper case characters are acceptable.

For a description of file names, see ref. [4].

Special commands are:

TERM When the last block in the file, given just before this com- mand, is transmitted, it is terminated by ETX instead of ETB (normally only the last block in the last file is terminated by ETX).

This command must be given, before one of the below mentioned commands can be given. Moreover it can be used to separate files, if the receiving system uses ETX to detect end of file (non-IBM systems).

DISC Disconnect the line (send DLE-EOT and remove DTR (Data Terminal Ready)).

This command is only allowed after a TERM-command. The command is dummy on a secondary (only the primary can connect/disconnect the line). But it must be given if the next command is wanted.

EXIT A soft reset of the RC855 is made (cold boot of CP/M).

This command is only allowed after a DISC-command.

Examples of command files:

1) JCL1.TXT

```
B:DATA.TXT/T
JCL2.TXT
TERM
A:JCL1.TXT/NT
B:DATA.TXT/T
A:JCL2.TXT/NT
```

The following will happen:

File JCL1.TXT on drive A will be transmitted in mode according to the configuration parameter TRANSPARENCY.

File DATA.TXT on drive B will be transmitted in transparent mode.

File JCL2.TXT on drive A will be transmitted in mode according to the configuration parameter TRANSPARENCY, the last block will be terminated by ETX.

File JCL1.TXT on drive A will be transmitted in non-transparent mode.

File DATA.TXT on drive B will be transmitted in transparent mode.

File JCL2.TXT on drive A will be transmitted in non-transparent mode. The last block will be terminated by ETX (because it is the last file to be transmitted).

2) SIGNOFF.TXT/NT

```
TERM
DISC
EXIT
```

The following will happen:

File SIGNOFF.TXT on drive A will be transmitted in non-transparent mode, the last block will be terminated by ETX.

The line is disconnected.

A soft reset (CP/M cold boot) is made.

7. MODEM SIGNALS 7.

The modem signals are used according to the CCITT V.24 recommendation. The modem signals used by the emulator are shown in appendix D.

Below is explained, how the emulator uses the signal Data Terminal Ready (108), and how those functions work, which directly affect this signal.

Data Terminal Ready (DTR) is set by the emulator:

1) first time the line is to be used for transmission/receival, or

2) if the function 'connect line' (PF13) is selected.

DTR remains set until removed by the emulator due to one of the following events:

1) DLE-EOT is received from the host.

2) Data Set Ready (107) from the modem is off.

3) The function 'disconnect line' (PF12 or DISC in a command file) is selected.

The functions directly affecting the DTR signal work as follows:

Connect line (PF13):

On selection the emulator sets DTR on and waits for DSR from the modem to be set on.

Disconnect line (PF12):

On selection the emulator transmits the control-sequence DLE-EOT and then removes DTR.

Wait connection (PF14):

On selection the emulator waits for the signal Calling Indicator (125) from the modem to be set on. Then the emulator sets DTR on and waits for DSR from the modem to be set on.

A. REFERENCES A.

[1] RCSL No 42-i1686:
RC855 Operating Guide
Henning Christensen, April 1982
Abstract: Operating Guide for the RC855 Terminal/Work Station. Describes: connections and operator controls; keyboard features; start-up procedures. Covers the general aspects and is ment to be used in conjunction with the application documentation.

[2] RCSL No 42-i1687:
RC855 Work Station, User's Guide
Pierce C. Hazelton, June 1982
Abstract: Describes how to install and operate the CP/M operating system on the RC855 Work Station.

[3] RCSL No 42-i1697:
RC855 IBM 3780 BSC Emulator, Installation Guide
Torben G. Rasmussen, May 1982
Abstract: This manual describes the installation of the RC855 IBM 3780 BSC Emulator under the RC855 CP/M operating system.

[4] RCSL No 42-i1698:
RC855 IBM 3780 BSC Emulator, Operating Guide
Torben G. Rasmussen, Henning Christensen, July 1982
Abstract: This manual describes the operation of the RC855 IBM 3780 BSC Emulator: keyboard functions, operating procedures, emulator messages. Further it contains brief descriptions concerning configuration file, command files, etc.

A.1 Additional References A.1

IBM publications:

GA27-3004 General Information - Binary Synchronous Communications

GA27-3063 Component Information for the IBM 3780 Data Communication Terminal.

B. EXAMPLES OF HOST GENERATION PARAMETERS B.

B.1 JES2 B.1

```
RMTnnn   3780, COMP, NUMPU=1, TRANSP
```

B.2 DOS/VS POWER/VS B.2

```
PRMT   REMOTE=nnn
       ,TYPE=3780
       ,SCE=YES
       ,LIST=132
       ,CS=YES
```

C. CHARACTER CODE SETS C.

C.1 US English EBCDIC C.1

	Bits 76	00				01				10				11			
	Bits 54	00	01	10	11	00	01	10	11	00	01	10	11	00	01	10	11
Bits 3210	Hex 1 / Hex 2	0	1	2	3	4	5	6	7	8	9	A	B	C	D	E	F
0000	0	NUL	DLE			SP	&	-						{	}	\	0
0001	1	SOH	DC1					/		a	j	~		A	J		1
0010	2	STX	DC2		SYN					b	k	s		B	K	S	2
0011	3	ETX	DC3							c	l	t		C	L	T	3
0100	4									d	m	u		D	M	U	4
0101	5	HT	NL							e	n	v		E	N	V	5
0110	6			ETB						f	o	w		F	O	W	6
0111	7			ESC	EOT					g	p	x		G	P	X	7
1000	8									h	q	y		H	Q	Y	8
1001	9		EM						`	i	r	z		I	R	Z	9
1010	A					]	!	¦	:								
1011	B	VT				.	$	,	#								
1100	C	FF				<	*	%	@								
1101	D	CR	IGS	ENQ	NAK	(	)	_	'								
1110	E		IRS			+	;	>	=								
1111	F		IUS			[	↑	?	"								

C.3 UK English EBCDIC

C.3

	Bits 76	00				01				10				11			
	Bits 54	00	01	10	11	00	01	10	11	00	01	10	11	00	01	10	11
Bits 3210	Hex 1 / Hex 2	0	1	2	3	4	5	6	7	8	9	A	B	C	D	E	F
0000	0	NUL	DLE			SP	&	-						{	}	\	0
0001	1	SOH	DC1					/		a	j	~		A	J		1
0010	2	STX	DC2		SYN					b	k	s		B	K	S	2
0011	3	ETX	DC3							c	l	t		C	L	T	3
0100	4									d	m	u		D	M	U	4
0101	5	HT	NL							e	n	v		E	N	V	5
0110	6			ETB						f	o	w		F	O	W	6
0111	7			ESC	EOT					g	p	x		G	P	X	7
1000	8									h	q	y		H	Q	Y	8
1001	9		EM						`	i	r	z		I	R	Z	9
1010	A					¤	!	¦	:								
1011	B	VT				.	£	,	]								
1100	C	FF				<	*	%	@								
1101	D	CR	IGS	ENQ	NAK	(	)	_	'								
1110	E		IRS			+	;	>	=								
1111	F		IUS			[	↑	?	"								

C.2 US English ASCII

Bits 654	000	001	010	011	100	101	110	111
Bits 3210 / Hex 1 / Hex 2	0	1	2	3	4	5	6	7
0000	0			SP	0	@	P	`	p
0001	1			!	1	A	Q	a	q
0010	2			"	2	B	R	b	r
0011	3			#	3	C	S	c	s
0100	4			$	4	D	T	d	t
0101	5			%	5	E	U	e	u
0110	6			&	6	F	V	f	v
0111	7			'	7	G	W	g	w
1000	8			(	8	H	X	h	x
1001	9			)	9	I	Y	i	y
1010	A	LF		*	:	J	Z	j	z
1011	B	VT		+	;	K	[	k	{
1100	C	FF		,	<	L	\	l	¦
1101	D	CR		-	=	M	]	m	}
1110	E			.	>	N	↑	n	~
1111	F			/	?	O	_	o	

C.4 UK English ASCII C.4

Bits 654	000	001	010	011	100	101	110	111
Bits 3210 / Hex 1 / Hex 2	0	1	2	3	4	5	6	7
0000	0			SP	0	@	P	`	p
0001	1			!	1	A	Q	a	q
0010	2			"	2	B	R	b	r
0011	3			£	3	C	S	c	s
0100	4			$	4	D	T	d	t
0101	5			%	5	E	U	e	u
0110	6			&	6	F	V	f	v
0111	7			'	7	G	W	g	w
1000	8			(	8	H	X	h	x
1001	9			)	9	I	Y	i	y
1010	A	LF		*	:	J	Z	j	z
1011	B	VT		+	;	K	[	k	{
1100	C	FF		,	<	L	\	l	¦
1101	D	CR		-	=	M	]	m	}
1110	E			.	>	N	↑	n	~
1111	F			/	?	O	_	o	

C.5 German EBCDIC

C.5

Commonly used with the IBM 3780 emulator.

Bits 76	00				01				10				11			
Bits 54	00	01	10	11	00	01	10	11	00	01	10	11	00	01	10	11
Bits 3210 / Hex 1 / Hex 2	0	1	2	3	4	5	6	7	8	9	A	B	C	D	E	F
0000	0	NUL	DLE			SP	&	-						ä	ü	Ö	0
0001	1	SOH	DC1					/		a	j	ß		A	J		1
0010	2	STX	DC2		SYN					b	k	s		B	K	S	2
0011	3	ETX	DC3							c	l	t		C	L	T	3
0100	4									d	m	u		D	M	U	4
0101	5	HT	NL							e	n	v		E	N	V	5
0110	6			ETB						f	o	w		F	O	W	6
0111	7			ESC	EOT					g	p	x		G	P	X	7
1000	8									h	q	y		H	Q	Y	8
1001	9		EM						`	i	r	z		I	R	Z	9
1010	A					Ä	Ü	ö	:								
1011	B	VT				.	ß	,	#								
1100	C	FF				<	*	%	§								
1101	D	CR	IGS	ENQ	NAK	(	)	_	'								
1110	E		IRS			+	;	>	=								
1111	F		IUS			!	↑	?	"								

C.6 German Alternate EBCDIC C.6

Only 90 codes are shown in the table below. The characters "$", "#", "`", "§", and """ can be entered from the keyboard. However, when they are transmitted to the host computer, all of these characters are transmitted as blanks (40_{Hex}).

	Bits 76	00				01				10				11			
	Bits 54	00	01	10	11	00	01	10	11	00	01	10	11	00	01	10	11
Bits 3210	Hex 1 / Hex 2	0	1	2	3	4	5	6	7	8	9	A	B	C	D	E	F
0000	0	NUL	DLE			SP	&	-									0
0001	1	SOH	DC1					/		a	j	'		A	J		1
0010	2	STX	DC2		SYN					b	k	s		B	K	S	2
0011	3	ETX	DC3							c	l	t		C	L	T	3
0100	4									d	m	u		D	M	U	4
0101	5	HT	NL							e	n	v		E	N	V	5
0110	6			ETB						f	o	w		F	O	W	6
0111	7			ESC	EOT					g	p	x		G	P	X	7
1000	8									h	q	y		H	Q	Y	8
1001	9		EM							i	r	z		I	R	Z	9
1010	A					ö	ü	ß	:								
1011	B	VT				.	Ü	,	Ä								
1100	C	FF				<	*	%	Ö								
1101	D	CR	IGS	ENQ	NAK	(	)	_	'								
1110	E		IRS			+	;	>	=								
1111	F		IUS			!	↑	?	ä								

C.7 German ASCII

C.7

Bits 654	000	001	010	011	100	101	110	111
Bits 3210 / Hex 1 / Hex 2	0	1	2	3	4	5	6	7
0000 0			SP	0	§	P	`	p
0001 1			!	1	A	Q	a	q
0010 2			"	2	B	R	b	r
0011 3			#	3	C	S	c	s
0100 4			$	4	D	T	d	t
0101 5			%	5	E	U	e	u
0110 6			&	6	F	V	f	v
0111 7			'	7	G	W	g	w
1000 8			(	8	H	X	h	x
1001 9			)	9	I	Y	i	y
1010 A	LF		*	:	J	Z	j	z
1011 B	VT		+	;	K	Ä	k	ä
1100 C	FF		,	<	L	Ö	l	ö
1101 D	CR		-	=	M	Ü	m	ü
1110 E			.	>	N	↑	n	ß
1111 F			/	?	O	_	o	

C.8 Swedish EBCDIC C.8

Commonly used with the IBM 3780 emulator.

	Bits 76	00				01				10				11			
	Bits 54	00	01	10	11	00	01	10	11	00	01	10	11	00	01	10	11
Bits 3210	Hex 1 / Hex 2	0	1	2	3	4	5	6	7	8	9	A	B	C	D	E	F
0000	0	NUL	DLE			SP	&	-						ä	å	Å	0
0001	1	SOH	DC1					/		a	j	ü		A	J		1
0010	2	STX	DC2		SYN					b	k	s		B	K	S	2
0011	3	ETX	DC3							c	l	t		C	L	T	3
0100	4									d	m	u		D	M	U	4
0101	5	HT	NL							e	n	v		E	N	V	5
0110	6			ETB						f	o	w		F	O	W	6
0111	7			ESC	EOT					g	p	x		G	P	X	7
1000	8									h	q	y		H	Q	Y	8
1001	9		EM						é	i	r	z		I	R	Z	9
1010	A					#	ø	ö	:								
1011	B	VT				.	Å	,	Ä								
1100	C	FF				<	*	%	Ö								
1101	D	CR	IGS	ENQ	NAK	(	)	_	'								
1110	E		IRS			+	;	>	=								
1111	F		IUS			!	Ü	?	"								

C.9 Swedish Alternate EBCDIC C.9

	Bits 76	00				01				10				11			
	Bits 54	00	01	10	11	00	01	10	11	00	01	10	11	00	01	10	11
Bits 3210	Hex 1 / Hex 2	0	1	2	3	4	5	6	7	8	9	A	B	C	D	E	F
0000	0	NUL	DLE			SP	&	-									0
0001	1	SOH	DC1					/		a	j			A	J		1
0010	2	STX	DC2		SYN					b	k	s		B	K	S	2
0011	3	ETX	DC3							c	l	t		C	L	T	3
0100	4									d	m	u		D	M	U	4
0101	5	HT	NL							e	n	v		E	N	V	5
0110	6			ETB						f	o	w		F	O	W	6
0111	7			ESC	EOT					g	p	x		G	P	X	7
1000	8					#	£	"	:	h	q	y		H	Q	Y	8
1001	9		EM			é	É	ü	Ü	i	r	z		I	R	Z	9
1010	A					ö	å		:								
1011	B	VT				.	Å	,	Ä								
1100	C	FF				<	*	%	Ö								
1101	D	CR	IGS	ENQ	NAK	(	)	_	'								
1110	E		IRS			+	;	>	=								
1111	F		IUS					?	ä								

C.10 Swedish ASCII

	Bits 654	000	001	010	011	100	101	110	111
Bits 3210	Hex 1 / Hex 2	0	1	2	3	4	5	6	7
0000	0			SP	0	É	P	é	p
0001	1			!	1	A	Q	a	q
0010	2			"	2	B	R	b	r
0011	3			#	3	C	S	c	s
0100	4			¤	4	D	T	d	t
0101	5			%	5	E	U	e	u
0110	6			&	6	F	V	f	v
0111	7			'	7	G	W	g	w
1000	8			(	8	H	X	h	x
1001	9			)	9	I	Y	i	y
1010	A	LF		*	:	J	Z	j	z
1011	B	VT		+	;	K	Ä	k	ä
1100	C	FF		,	<	L	Ö	l	ö
1101	D	CR		-	=	M	Å	m	å
1110	E			.	>	N	Ü	n	ü
1111	F			/	?	O	_	o	

C.11 Danish Standard EBCDIC

C.11

Bits 76	00				01				10				11			
Bits 54	00	01	10	11	00	01	10	11	00	01	10	11	00	01	10	11
Bits 3210 / Hex 1 / Hex 2	0	1	2	3	4	5	6	7	8	9	A	B	C	D	E	F
0000	0	NUL	DLE			SP	&	-						æ	å	ä	0
0001	1	SOH	DC1					/		a	j	ü		A	J		1
0010	2	STX	DC2		SYN					b	k	s		B	K	S	2
0011	3	ETX	DC3							c	l	t		C	L	T	3
0100	4									d	m	u		D	M	U	4
0101	5	HT	NL							e	n	v		E	N	V	5
0110	6			ETB						f	o	w		F	O	W	6
0111	7			ESC	EOT					g	p	x		G	P	X	7
1000	8									h	q	y		H	Q	Y	8
1001	9		EM						ö	i	r	z		I	R	Z	9
1010	A					#	ß	ø	:								
1011	B	VT				.	Å	,	Æ								
1100	C	FF				<	*	%	Ø								
1101	D	CR	IGS	ENQ	NAK	(	)	_	'								
1110	E		IRS			+	;	>	=								
1111	F		IUS			!	↑	?	"								

C.12 Danish Standard Alternate EBCDIC C.12

Commonly used with the IBM 3780 emulator.

Only 93 EBCDIC codes are used for graphic characters. The characters "Å" and "$" can both be entered from the keyboard. However, when they are transmitted to the host computer, both "Å" and "$" are transmitted as $5B_{Hex}$. When the EBCDIC code $5B_{Hex}$ is received from the host, it is printed as "Å". The characters "Æ" and "#" are similarly treated. Both are transmitted as $7B_{Hex}$. When $7B_{Hex}$ is received, it is printed as "Æ".

	Bits 76	00				01				10				11			
	Bits 54	00	01	10	11	00	01	10	11	00	01	10	11	00	01	10	11
Bits 3210	Hex 1 / Hex 2	0	1	2	3	4	5	6	7	8	9	A	B	C	D	E	F
0000	0	NUL	DLE			SP	&	-									0
0001	1	SOH	DC1					/		a	j			A	J		1
0010	2	STX	DC2		SYN					b	k	s		B	K	S	2
0011	3	ETX	DC3							c	l	t		C	L	T	3
0100	4									d	m	u		D	M	U	4
0101	5	HT	NL							e	n	v		E	N	V	5
0110	6			ETB						f	o	w		F	O	W	6
0111	7			ESC	EOT					g	p	x		G	P	X	7
1000	8							"	!	h	q	y		H	Q	Y	8
1001	9		EM			ö	ä	ü		i	r	z		I	R	Z	9
1010	A					ø	å		:								
1011	B	VT				.	Åß	,	Æ#								
1100	C	FF				<	*	%	Ø								
1101	D	CR	IGS	ENQ	NAK	(	)	_	'								
1110	E		IRS			+	;	>	=								
1111	F		IUS			↑		?	æ								

C.13 Danish Standard ASCII

Bits 654 / Hex 1 / Bits 3210 / Hex 2	000 0	001 1	010 2	011 3	100 4	101 5	110 6	111 7
0000	0		SP	0	ü	P	ä	p
0001	1		!	1	A	Q	a	q
0010	2		"	2	B	R	b	r
0011	3		#	3	C	S	c	s
0100	4		¤	4	D	T	d	t
0101	5		%	5	E	U	e	u
0110	6		&	6	F	V	f	v
0111	7		'	7	G	W	g	w
1000	8		(	8	H	X	h	x
1001	9		)	9	I	Y	i	y
1010	A	LF	*	:	J	Z	j	z
1011	B	VT	+	;	K	Æ	k	æ
1100	C	FF	,	<	L	Ø	l	ø
1101	D	CR	-	=	M	Å	m	å
1110	E		.	>	N	↑	n	ö
1111	F		/	?	O	_	o	

C.14 Danish Public Sector EBCDIC C.14

Bits 76	00				01				10				11			
Bits 54	00	01	10	11	00	01	10	11	00	01	10	11	00	01	10	11
Bits 3210 / Hex 1 / Hex 2	0	1	2	3	4	5	6	7	8	9	A	B	C	D	E	F
0000	0	NUL	DLE			SP	&	-						æ	å	Ü	0
0001	1	SOH	DC1					/		a	j	ü		A	J		1
0010	2	STX	DC2		SYN					b	k	s		B	K	S	2
0011	3	ETX	DC3							c	l	t		C	L	T	3
0100	4									d	m	u		D	M	U	4
0101	5	HT	NL							e	n	v		E	N	V	5
0110	6			ETB						f	o	w		F	O	W	6
0111	7			ESC	EOT					g	p	x		G	P	X	7
1000	8									h	q	y		H	Q	Y	8
1001	9		EM						@	i	r	z		I	R	Z	9
1010	A					§	¤	ø	:								
1011	B	VT				.	Å	,	Æ								
1100	C	FF				<	*	%	Ø								
1101	D	CR	IGS	ENQ	NAK	(	)	_	'								
1110	E		IRS			+	;	>	=								
1111	F		IUS			!	↑	?	"								

C.15 Danish Public Sector Alternate EBCDIC

C.15

Commonly used with the IBM 3780 emulator.

Only 94 EBCDIC codes are used for graphic characters. The characters "Å" and "$" are treated as described for the Danish standard EBCDIC character codes; see C.11.

	Bits 76	00				01				10				11			
	Bits 54	00	01	10	11	00	01	10	11	00	01	10	11	00	01	10	11
Bits 3210	Hex 1 / Hex 2	0	1	2	3	4	5	6	7	8	9	A	B	C	D	E	F
0000	0	NUL	DLE			SP	&	-									0
0001	1	SOH	DC1					/		a	j			A	J		1
0010	2	STX	DC2		SYN					b	k	s		B	K	S	2
0011	3	ETX	DC3							c	l	t		C	L	T	3
0100	4									d	m	u		D	M	U	4
0101	5	HT	NL							e	n	v		E	N	V	5
0110	6			ETB						f	o	w		F	O	W	6
0111	7			ESC	EOT					g	p	x		G	P	X	7
1000	8							"	!	h	q	y		H	Q	Y	8
1001	9		EM			@		ü	Ü	i	r	z		I	R	Z	9
1010	A					ø	å		:		§						
1011	B	VT				.	Åg	,	Æ								
1100	C	FF				<	*	%	ø								
1101	D	CR	IGS	ENQ	NAK	(	)	_	'								
1110	E		IRS			+	;	>	=								
1111	F		IUS			↑		?	æ								

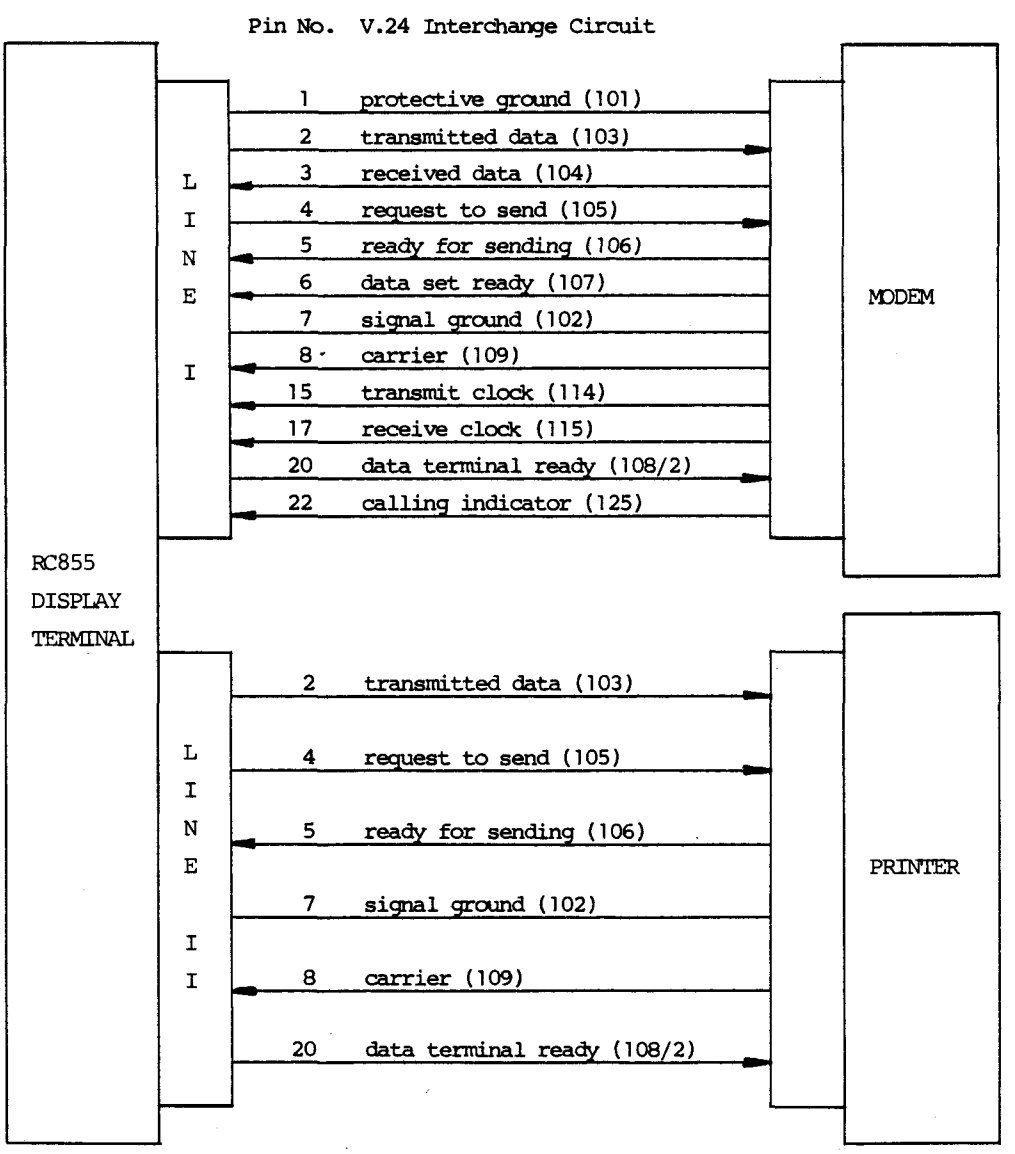
C.16 Danish Public Sector ASCII C.16

Bits 654	000	001	010	011	100	101	110	111
Bits 3210 / Hex 1 / Hex 2	0	1	2	3	4	5	6	7
0000	0			SP	0	@	P	↑	p
0001	1			!	1	A	Q	a	q
0010	2			"	2	B	R	b	r
0011	3			§	3	C	S	c	s
0100	4			¤	4	D	T	d	t
0101	5			%	5	E	U	e	u
0110	6			&	6	F	V	f	v
0111	7			'	7	G	W	g	w
1000	8			(	8	H	X	h	x
1001	9			)	9	I	Y	i	y
1010	A	LF		*	:	J	Z	j	z
1011	B	VT		+	;	K	Æ	k	æ
1100	C	FF		,	<	L	Ø	l	ø
1101	D	CR		-	=	M	Å	m	å
1110	E			.	>	N	Ü	n	ü
1111	F			/	?	O	_	o	

D. V.24 CONNECTIONS D.

The RC355 display terminal has two 25-pin type DB25-S connectors, which are used for attachment of signal cables to a modem (used for BSC communication with a host computer) and a printer. The connector for the modem is market LINE I, and the connector for the printer LINE II. Note: In IBM 3780 emulations only the primary terminal (or a stand-alone terminal) supports the printer connection.

The illustration below shows the correspondence between the connector pins and interchange circuits as defined in the CCITT V.24 recommendation. This correspondence complies with ISO Standard No 2110. Pins not shown, are not used by the emulator.



E. INDEX E.

RETURN LETTER

Title: RC855 IBM 3780 BSC Emulator Reference Manual

RCSI. No.: 42-i1699

A/S Regnecentralen af 1979/RC Computer A/S maintains a continual effort to improve the quality and usefulness of its publications. To do this effectively we need user feedback, your critical evaluation of this manual.

Please comment on this manual's completeness, accuracy, organization, usability, and readability:

_____

_____

_____

_____

Do you find errors in this manual? If so, specify by page.

_____

_____

_____

_____

How can this manual be improved?

_____

_____

_____

_____

Other comments?

_____

_____

_____

_____

_____

Name: _____ Title: _____

Company: _____

Address: _____

Date: _____

Thank you

42-i 1288

. . . . . Fold here . . . . .

. . . . . Do not tear - Fold here and staple . . . . .

Affix
postage
here

REGNECENTRALEN
af 1979

Information Department
Lautrupbjerg 1
DK-2750 Ballerup
Denmark